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THE PLANT DISEASE REPORTER

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Division of Mycology and Disease Survey

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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DIVISION OF MYCOLOGY AND DISEASE SURVEY

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MILD STREAK DISEASE OF BLACK RASPBERRIES IN MARYLAND

Mark W. Woods and I. C. Haut

In 1938 a very mild form of streak ("Eastern Blue Stem") was observed in a commercial planting of Logan black raspberries in Washington County, Maryland. The disease was very similar to "mild streak" as described by Cooley from Ohio in 1932 (Phytopath. 1932). Subsequent observations in commercial berry plantings during the past two years have shown this disease to be widespread in Maryland in Washington County with a few cases in Frederick County. The disease has also been detected in certified nursery stock shipped in from certain other States. Mild streak is the most destructive disease in certain Maryland plantings. Whereas severe streak is readily detected, and hence easily rogued, mild streak is very hard to recognize. The following description of the latter disease as it occurs in Maryland may be of some value to workers in other States who are trying to produce streak-free nursery stock. Experiments on dissemination and transmission of the virus are under way at the Maryland Agricultural Experiment Station. Mild streak has been observed in Maryland on the following varieties of black raspberries: Cumberland, Logan, Dundee, Black Diamond, Naples, Quillen, Evans, Bristol, and Shuttleworth. For some reason the disease has not been observed in Black Beauty even when this variety was growing in close proximity to heavily infected material. Final conclusions cannot yet be drawn, but there is evidence that this variety has considerable resistance to streak.

In mild streak the markings on the canes are similar to those produced by severe streak but are much less pronounced. Cane symptoms are best detected from just prior to the fruit ripening season until the new canes begin to color normally. Lesions are frequently observed within approximately one foot of the ground on the new canes, but may appear on laterals or just back of the tips. The discoloration varies from greenish-brown in some varieties to violet in others. In Dundee, Bristol, and Logan, for example, the streaks are purple to violet and generally pronounced. In Naples the streaks are greenish-brown and in Evans bluish but generally very distinct. While superficially the streaks appear as single lines, they are actually narrowly elliptical so that a small elliptical central island of normal-appearing cane surface is usually enclosed. If the bloom is rubbed off, the epidermis appears watersoaked and colored. Sometimes only a few isolated streaks appear on a cane, but the whole cane may be so heavily streaked as to give an over-all watersoaked appearance. The streaks are often so faint as to be barely discernible.

Table 1. Relation between cane streak symptoms and other plant responses in four varieties of black raspberry (Observations from June 26 to July 9, 1940).

Type of response	Percentage of plants showing various symptoms and relative degrees of vigor									
	Plants showing cane streaks				Plants without cane streaks				Averages	
	Logan	Evans	Dundee	Black Diamond	Logan	Evans	Dundee	Black Diamond	Streaked plants	Unstreaked plants
Curling of leaves near cane tip	47.0	48.3	83.7	85.7	0	2.2	0	0	66.1	0.5
Clearing of veins	35.2	35.4	58.1	22.2	0	0	0	0	37.7	0
Shiny fruit	23.5	3.2	4.4	22.2	86.8	73.3	72.0	97.3	13.3	82.3
Dull fruit	76.5	96.8	95.6	77.8	13.2	26.7	28.0	2.7	86.7	17.6
Exceptional to good vigor	29.5	67.8	46.7	50.0	34.5	55.6	60.0	60.6	48.5	52.8
Medium to low vigor	70.5	32.2	53.3	50.0	65.5	44.4	40.0	39.4	51.5	46.1

The leaves near the tips of the new canes are frequently (see table 1) slightly curled in a manner reminiscent of severe streak. Vein-clearing (table 1) often occurs. The new canes of affected plants may be very vigorous producing vigorous tip layers. The effect on the fruit is very severe. In fact, the name "mild streak" is in this respect totally misleading. The berries are mostly dull (even in the red stage of ripeness) in lustre, dry, and of poor flavor. With abundant moisture the fruit symptoms are less pronounced, but fruit of affected plants is never equal in quality to that of healthy plants. Plantings have been observed in which fruit from mild streak-infected portions was entirely worthless while healthy plants from the same planting were yielding fruit of high quality. Streak can be detected the same year in which the plants are set if the inspection is made at mid-season or later. While cane streaks can be

detected in young plants, leaf symptoms are of particular value. In some varieties (e.g. Cumberland and Dundee) the leaves on the new canes are curled and have a greasy rugose appearance. This latter symptom may also appear in older plants. Vein-clearing of leaves formed on the "handles" are valuable aids in streak detection in young sets. On certain varieties (e.g. Dundee and Cumberland) it should be very helpful to allow the old "handles" to remain until they leaf out so that streak-infected plants can be rogued out on the basis of vein-clearing symptoms. In this way early dissemination may be reduced. Where anthracnose is a problem, it may not be possible to do this. Possibly the plants could be dipped in lime-sulphur before setting to reduce anthracnose infection.

Field data indicates that mild streak may spread rather rapidly over short distances (up to 20 feet) and slowly over greater distances (200 feet more or less). There is circumstantial evidence that blackberries if planted near raspberries tend to promote dissemination of the virus in the latter. This is in accord with the observations of Thornton for severe streak in Pennsylvania (Phytopath. 1935).

Mild streak promises to be a serious factor in raspberry production. Roguing for this disease is much more difficult than for any of the other raspberry virus diseases. Inspections must be made sufficiently late in the season, and it is important to regard the differences in symptom expression that are characteristic of certain varieties. In all cases a very thorough hill-by-hill inspection must be given.

(Maryland Agricultural Experiment Station)

YELLOW-RED VIROSIS ON CHOKECHERRY IN ILLINOIS

H. W. Anderson and H. F. Seifert

A preliminary survey of the diseased chokecherries (Prunus virginiana) located last year (P.D.R. 23: 328) showed definite symptoms on July 30. Observations made by nursery inspectors earlier in the season indicate that symptoms were evident as early as July 25, but not much before that date. The symptoms on July 30 were yellowing of the leaves with a faint red tinge on the younger leaves. The red color has gradually increased in intensity. Rosetting is usually present in the diseased clusters of shoots.

During the week of August 5 to 11, eight state nursery inspectors surveyed counties in northern Illinois for the purpose of checking on the cases found last year and to extend the records on both healthy and diseased chokecherry. Another survey will be conducted to determine the southern limit of the chokecherry in Illinois. To date, no chokecherry has been found south of a line running through Bloomington, which is approximately on a line with the southern Iowa state border. This is far north of commercial peach orchards in Illinois.

The yellow-red virosis has been found on chokecherry in scattered localities in the Chicago area and across the northern tier of counties. To date it has not been possible to arrive at any conclusion as to the time when the first infection on chokecherry occurred in the state. Its wide distribution would indicate that it has been present for several years. A more definite statement will be possible after the present survey is completed. No infected peach trees have been found, but no attempt has been made to inspect the few peach trees grown in northern Illinois.

(University of Illinois and Illinois State Department of Agriculture)

TOMATO DISEASES FOUND IN WESTERN TENNESSEE IN 1940

M.C. Richards

Approximately 7000 acres of tomatoes are grown for the green wrap market and about 700 acres for commercial canning purposes in Western Tennessee. Field inspections made during the 1940 tomato growing season in Madison, Crockett, Gibson, Obion, and Tipton Counties showed the presence of the following diseases.

Bacterial canker (*Aplanobacter michiganense*) [*Phytomonas michiganensis*] was found only on tomato fruits in a few fields in Madison, Gibson, and Crockett Counties. Losses from this disease were slight.

Fusarium wilt (*Fusarium* [*bulbigenum*] *lycopersici*). A trace or more of Fusarium wilt was found in nearly everyfield inspected. In two fields in Gibson County 15 and 25 percent of the plants were killed outright by wilt. Losses from fusarium wilt for the area were slight as 95 percent of the plantings made for commercial purposes are of the wilt-resistant varieties.

Southern blight (Sclerotium rolfsii) was frequently found in the experimental plots at the Jackson Substation on the fruits touching the ground. No infected plants were observed.

Early blight (Alternaria solani) was first noticed on staked tomatoes during the last part of May. At that time some spotting and killing of the lower leaves had occurred. The organism spread up the plants so that from the middle of July on, the plants in many fields were completely defoliated. The crop harvested for the green wrap market was not affected, growers reporting a better crop than usual. Fruits left on the vines after the middle of July were small, sunburned and of such poor quality that by August they could not be sold for canning purposes. A trace of the "nail head rust" stage of this disease was found in 3 fields in Crockett county on Marglobe and Gulf State Market tomato fruits.

Septoria leaf spot (Septoria lycopersici) appeared during July in fields in Madison, Crockett, and Gibson Counties. It caused some defoliation, but was not nearly as important as early blight. It was much more abundant in the test plots at the Experiment Station than early blight, but appeared so late that it caused no damage.

Buckeye rot (Phytophthora terrestris) [P. parasitica] was abundant, causing about 5 percent loss, in the test plots at the Experiment Station on non-staked tomatoes.

Soil rot (Corticium vagum) [C. solani] was prevalent in the test plots resulting from continuous rains in July, about 10 percent of the fruits were lost on the non-staked vines from this cause.

Virus diseases: Tomato mosaic and leaf mottle were found in nearly all fields inspected. In some fields 50 percent of the plants were affected with mosaic, but losses were slight. In most cases the plants became infected after setting fruit. A few plants infected with fern leaf and streak were found in several fields in Gibson County.

Tomato puff (cause undetermined) was found in many fields, but caused no important losses.

Blossom end-rot (cause undetermined) was most prevalent in Tipton County on canning tomatoes. It was found to be serious in only one field in Madison County.

(West Tennessee Experiment Station, Jackson, August 23)

INCIDENCE OF WHAT FOOT-ROTS IN KANSAS AND COLORADO

Hurley Fellows

The weather records show that this July was the fourth driest that has been observed in the vicinity of Manhattan.

The take-all foot-rot [*Ophiobolus graminis*] of wheat was more severe in Kansas this year than last. This was particularly true in Riley and Sedgwick Counties. Several fields were found in which the losses ran from 50 to 75 percent. Take-all this year, however, was not nearly so abundant as during a normal weather year. A fair amount of moisture and cool weather during the spring and early summer probably accounted for an increase of take-all this year.

The foot-rot ordinarily found in the dry-land areas was well named when called the "dry-land foot-rot" [*Helminthosporium* - *Fusarium*]. The area of the semiarid regions has been greatly increased during the last few years and the foot-rot has followed in step with it.

The dry-land foot-rot was found west from Manhattan to Denver and scattered through northeastern Colorado and extreme northwestern Kansas. This must not be interpreted to mean there was wheat everywhere throughput these regions. The foot-rot was particularly abundant in localities or fields where germination was prompt last fall.

In the past much emphasis has been laid on the fact that early seeding encouraged dry-land foot-rot. This idea was stressed this crop year by the behavior of the disease in fields where germination was irregular. Spots or areas in fields where germination was prompt had much more disease than in places where it was retarded by drought.

(Division of Cereal Crops and Diseases, August 6. From Cereal Courier 32: 105. August 10).

FOOT AND ROOT ROTS OF SMALL GRAINS AND GRASSES IN THE DAKOTAS

Roderick Sprague

Field observations made on three trips in late June and the first half of July covered about 30 counties in North Dakota. The stands of small grain were very spotted. The mid-season drought proved

rather destructive to over-leafy plants and local showers came too late in some areas. The grain in the northern part of the State looks well, particularly west of Minot, northwest of Williston and near Langdon and there are localized areas such as in extreme southern Cass County and along the edge of Golden Valley County where the grain is heavy. Rains were heavier in the generally drier western part of the State than in the usually more humid eastern half. The northwestern counties were particularly favored by well-spaced rains during the growing season. Crops in the area south of Valley City and Jamestown were badly burned and some were beyond help in late June. Crops in the Red River Valley are particularly spotted; one field will have a fair crop and the adjacent field with a slightly different tillage history will be very poor.

Rootrots were found in every field of grain examined but, in general, they were severest in the following counties: Grand Forks, Nelson, Ramsey, Cavalier, Wells, McHenry, Williams, Stark, and Morton. Helminthosporium sativum and to a lesser extent Pythium arrhenomanes and the usual array of Fusarium spp. were isolated from early-season plants of wheat in large numbers. The Pythium was usually found in sandier soils. It has also been isolated from oats, sorghums, corn, pigeon grass (very common) and a number of other grasses, particularly in the sandy loam hill plot at Mandan.

Root injury based on a calculated loss in yield ranged from 0.7 to 1 percent in some fields to as much as 9 percent in other commercial fields. On the stations in rotation plots losses ran higher than this; in one case at Dickinson, for instance, in a plot of fall plowed durum wheat continuously cropped the loss was 35 percent from Helminthosporium-Fusarium rootrot. In general, losses on fallow averaged about 9 percent in wheat, on disced corn land about 10 to 11 percent, on spring-plowed land about 10 percent and on fall plowed from 15 to 35 percent, depending on the rotations involved. Green manure caused material increases in rootrot at Mandan and at Dickinson.

At Fargo and also at Williston early season blight was very scarce but in late season a crown rot comparable to Hurley Fellows' dryland foot-rot developed in virtually every plant following late rains. It is admittedly difficult to gauge the exact seriousness of this condition but it is believed to be of decided economic importance, particularly at Fargo, where root growth appears to terminate abruptly after this attack. Isolations which are just now beginning to develop indicate that Fusarium outnumbers Helminthosporium in this late-season warm weather disease.

Isolations of fungi from grasses showed early season predominance of Helminthosporium sativum in a myriad of strains. As mentioned, Pythium was also obtained from several species of grasses, and Fusarium spp. have been isolated from 48 species of grasses showing rootrot lesions. Seedling blights of grasses are important at Mandan, Langdon, McCanna, and Park River and are present in some seriousness at Fargo and less so apparently at Dickinson and Williston. Of course, in eastern South Dakota seedling blight has virtually stopped the grass seeding program in some areas near Huron, and at Brookings and southward. At Huron, Alcester, Vermillion, and adjacent areas in South Dakota early season isolations ran strongly to Helminthosporium sativum, but Fusarium appeared to be a factor particularly at Vermillion. With fresh material it is suspected that Pythium would be found in greater amounts than the few isolations that were possible with advanced specimens received.

(Division of Cereal Crops and Diseases, July 26. From Cereal Courier 32: 111. August 10).

SOME NEW RECORDS FROM VARIOUS LOCALITIES

CHARCOAL ROT ON HARDY PHLOX IN ILLINOIS: The cultivated, late-blooming hardy phlox (Phlox decussata) is a host for Rhizoctonia bataticola (Taub.) Butl. In a private garden at Warrensburg, Macon County, Illinois, Mr. James S. Conard, state plant inspector, collected on August 20, 1940, a diseased phlox plant which he brought to our laboratory for examination. The basal portions of the stems of this plant were affected by a rot and contained the typical sclerotia in large numbers. According to Mr. Conard's report, 5 or 6 plants among some 25 in the garden were similarly affected. (Lee R. Tehon, August 23, Illinois State Natural History Survey).

[NOTE--There is no other record in the Survey files of the occurrence of this fungus in this country on any species of Phlox.]

OUTBREAK OF SPOTTED WILT ON TOMATOES AND PEPPERS IN PENNSYLVANIA: There has been an outbreak of spotted wilt [virus] of tomatoes on the property of one grower in Cambria County, near Johnstown, this year. This man grows a large area of tomatoes under glass for the off-season trade and also grows a quantity of tomatoes and peppers in the field. About 10 percent of the plants grown under glass and approximately 5 percent of the field-grown crop were ruined by this disease this summer. The disease has also spread to his peppers and about 15 percent of this crop is affected.

To make sure of the identification, plants were sent to Dr. L.M. Black of the Rockefeller Institute at Princeton. He states that the disease is spotted wilt. (H.W. Rankin, August 13. Pennsylvania State College.)

BRIEF NOTES ON PLANT DISEASES

BITTER ROT OF APPLES IN SOUTHERN ILLINOIS IN 1940: Apple bitter rot, caused by Glomerella cingulata (Stonem.) S. and von S., was found on August 1 in southern Illinois. Although only one tree with ten infected fruits was observed in a planting of Golden Delicious in Massac County on this date, the disease made its appearance about ten days before, since the grower had been removing infected fruits for about a week. This orchard has had three applications of Bordeaux. In a Golden Delicious planting in Franklin County where no Bordeaux has been applied, the disease was found on three trees. About a 30 percent loss was experienced in this orchard in 1939, according to the grower. No bitter rot was found on susceptible varieties examined in Jefferson County August 9.

Although the disease reached epidemic proportions in southern Illinois in 1939 (Plant Disease Reporter 23 (17): 294), it has not become serious this year. This was to be expected since the weather has been extremely hot and dry in this region during the last half of July. Also, the rainfall in this region, according to the climatological data of the United States Weather Bureau, was deficient or below normal by a total of 8.17 inches from September 1, 1939, to July 1,1940. With a continuation of local showers and hot weather which began in this region the first week in August, or with an extended rainy period, the disease might still reach epidemic proportions before the crop is harvested. (G. H. Boewe. Illinois State Natural History Survey)

DWARF SMUT PREVALENT ON WHEAT IN MONTANA: Dwarf smut [Tilletia] is very prevalent again this year in many fields along the foot of the Bridger Range. Some fields of more than 50 acres average approximately 50 percent infected heads and some acres in the fields have more than 75 percent infection. (R. H. Bamberg, July 31. From Cereal Courier 32: 112. August 10).